

NETWORK ROUTING TABLE AND PACKET ROUTING METHOD

ABSTRACT OF THE DISCLOSURE

A routing table circuit for a router has one or more input ports and output ports for message communication. In the routing table circuit, one or more routing table memories store a plurality of routing table arrays. The routing table arrays are arranged hierarchically in levels, and each routing table array is associated with a predetermined subset of prefixes. Each routing table array has entries. The entries include a block default route pointer field to store a block default route pointer, if any, and a routing field. The route engine may access any level of table array by using a next level route pointer stored in the routing field. Using the block default route and the routing field, the present invention further reduces the number of memory accesses and the update cost for route insertion and deletion by identifying and skipping elements that do not require route updating.